

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



Ministry of Finance
Male', Maldives

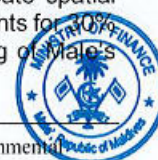
TERMS OF REFERENCE

Project Management, Design and Construction Supervision Consultants (Firm) for the Greater Male Environmental Improvement and Waste Management Project - Phase 1

A. Background

1. The Maldives consists of over 1,190 islands, spanning approximately 900 kilometers along the Indian Ocean. Only 188 of these islands are inhabited, and the population is concentrated in a few of the larger islands. Malé, the capital, is home to 39% of the country's total population of roughly 341,200 people. Around 60% of the total population (216,000 people) live in the Greater Male capital region (which includes Male, Hulhumale, Hulhula, Villamale, Gulhi Falhu, Thilafushi islands) and 32 inhabited islands in atolls of Kaafu, Alifu Alifu, Alifu Dhaalu and Vaavu, which include Male, the capital city, 73 tourist resorts, 14 city hotels, 177 guest houses, along with institutions and industry. This area is defined as Zone 3 by the National Solid Waste Management Policy 2015.
2. Zone 3 suffers from severe environmental pollution and deteriorating urban livability from inadequate waste collection and haphazard disposal with open dumping and burning of garbage compromising public health and marine ecosystems. Smoke, odor, and flies from the dumpsite on Thilafushi Island are a daily nuisance and a health issue to Male's residents and tourists, with plumes of smoke visible from Male's airport and several surrounding resorts. The region lacks an organized and sustainable solid waste management system for the 774 tons per day (tpd) of mixed solid waste generated. with expected growth up to 924 tpd by 2022 from rapid urbanization and expansion of tourism growth. Considering the Maldives' major economic activities (or industries), high-end tourism and fisheries for food and export, heavily depend on the country's pristine environment, pollution from improper waste management poses significant threats to the economy, livability in the capital region and livelihoods of poor people, especially in outer islands¹.
3. Improving solid waste management in the country and Greater Male region is a top priority of the Government of Maldives. The President's 2015 Manifesto explicitly aims to improve waste management in the Male area. The 2015 National Policy for Solid Waste outlines key principles to improve environmental quality, and the Solid Waste Management Act (currently pending approval in Parliament) sets a legal and institutional framework for the sector. MOE launched the Saafu Raajje (Clean Maldives) initiative in 2015, a national public awareness

¹ As part of its national strategy to achieve efficient public spending on economic and social services, the Government of the Maldives targeted 70% of its total population to reside in Greater Male. The plan seeks to create spatial agglomeration and generate economic opportunities for faster growth and poverty reduction. Tourism accounts for 70% of gross domestic product and is expected to expand, particularly in the project area. The near doubling of Male's population will significantly increase pressure on the already stressed solid waste services



sanitation campaign, and in November 2015, a green tax was passed to levy fees on tourist resorts to raise funds for environmental programs.

4. **The project.** The government requested support from the Asian Development Bank (ADB) to implement the "Greater Malé Environmental Improvement and Waste Management Project ("the project"). The project will establish a sustainable regional solid waste management system in Greater Male by (i) improving collection, transfer, disposal, treatment (using advanced waste-to-energy [WTE] technology), recycling, and dumpsite rehabilitation; (ii) strengthening institutional capacities for solid waste services delivery and environmental monitoring, and (iii) improving public awareness and behaviors in reduce-reuse-recycle (3R). The project will improve climate change resilience and disaster risk management, create a cleaner environment, reduce greenhouse gas emissions, and contribute to reductions in the cost of electricity.
5. The project is split into two phases. Phase 1, for ADB's approval in 2018, will support improved collection, transfer, dumpsite management and logistics, community-based island waste management systems, institutional capacity for services delivery, and public awareness building activities. Phase 2, for ADB's approval in 2019, will develop the regional waste management facility with WTE plant, and rehabilitate the existing dumpsite. The executing agency (EA) is the Ministry of Finance (MOF). The implementing agency (IA) is the Ministry of Environment (MOE) who will establish a project management unit (PMU) comprising officials from MOE and WAMCO.
6. **Assignment.** This assignment will support the Government (EA and IA also referred as the Client) to successfully implement Phase 1 of the project through high quality design, management and construction supervision.

ADDITIONAL INFORMATION

7. **Institutional arrangements for solid waste management.** The MOE Waste Management and Pollution Control Department is mandated to ensure safe waste disposal and cost-effective and environmentally-responsible waste management and pollution controls on all inhabited islands in line with the Government's manifesto. The Department is also in charge of drafting national strategies and action plans to implement national policies. The Waste Management Corporation Ltd. (WAMCO) is the state-owned operator created in 2015 to provide sustainable solid waste management collection and transfer in Greater Male capital region. WAMCO's core business is the collection and transport of waste and management of regional waste management facilities throughout the country. Under the government's decentralization program, island councils are mandated to support planning functions including solid waste management services.
8. **Waste collection and transfer in the project area.** High population density and narrow streets in the capital city Malé presents unique challenges for waste collection. Waste collection is operated by WAMCO with limited staffing, technical and managerial experience in modern and efficient collection systems. Current collection coverage is estimated to be 89% in Malé, 89% in ViliMalé, and 84% Hulhumalé though highly inefficient resulting in waste piling on streets. Household waste is collected during evening peak traffic hours resulting in significant congestion, while most waste is hand carried up and down stairs by collection crews within high-rise buildings. There are no standardized collection routes, collection points or bins. Collection equipment includes a small fleet of aging trucks unable to access smaller streets. While WAMCO is trying various initiatives to improve collection, the company received around 150 complaints per day (as of September 2017) on its hotline mostly related to non-collection. There is no planned collection for the substantial 500 tpd of construction and



demolition waste (C&D) while hazardous wastes are commonly commingled and disposed with municipal solid waste. Waste is transferred in open non-containerized vessels resulting in significant spillage into the open ocean. Approximately 20 tpd of waste is dumped on beaches or in the ocean on outer islands, with backyard burning a common practice. The lack of technical and professional skills in waste management is a key issue affecting the sector's performance.

9. **Current status of solid waste management.** Collected waste is transported on two barges to the industrial island of Thilafushi located 6 kilometers from Male.² The 30-year old, 10-hectare open dumpsite managed by WAMCO has no leachate control systems and since 2008, the government has deliberately set fires to reduce growing mounds of garbage, resulting in plumes of smoke and severe air pollution hazards to on-site workers, Male residents, and surrounding resorts generating frequent complaints. On-site equipment and site logistics are not sufficient or optimal to efficiently manage the growing volumes of incoming waste. The scarcity of land on Thilafushi requires the government to reclaim 15 ha of additional land in the adjacent lagoon (1.5 meters depth) next to the dumpsite for the proposed regional waste management facility (under Phase 2).³
10. **Climate change and disaster risks.** As one of the lowest-lying countries in the world (1.5 meters above mean sea level), the Maldives is vulnerable to sea level rise, and intensifying weather hazards linked to climate change including precipitation and storm severity.⁴ The eastern side of the Maldives including Greater Male is more exposed to ocean-based disasters (tsunamis, storm surges, ocean flooding, strong winds) than the western side. The Asian tsunami in December 2004 deposited approximately 290,000 cubic meters of waste from open dumpsites, including municipal and hazardous wastes (asbestos, medical, oil).⁵ Specific protection measures built into the project design to protect systems from future climate change and disasters include: (i) strengthening seawalls at project locations, (ii) elevating mechanical and electrical equipment at proposed WAMCO administrative buildings, (iii) flood proofing transfer stations, (iv) designing facilities for Category 2 storms and related wind speeds, (v) including leachate collection systems at transfer stations, (vi) capacity building and awareness raising on disaster management activities for WAMCO and first responders (police, fire fighters) on Thilafushi, and (vii) preparing a solid waste management risk action plan outlining response, recovery and prevention tasks.
11. **Lessons.** The following lessons learned and good practices are incorporated into the project design: (i) include operation and maintenance (O&M) into contracts and technical capacity building for O&M, (ii) develop high project readiness to avoid downstream delays, (iii) use phased approaches and provide adequate support for preparation support, (iv) establish a dedicated full-time project management unit (PMU) with adequate staff, (v) provide handholding and capacity building support to PMU staff in project implementation particularly in procurement, contract management, and safeguards, (vi) complement infrastructure investments with strong capacity building in technical and strategic planning, (vii) training activities targeting women planned around women's development committee availability and conducted simultaneously with the provision of infrastructure and equipment to ensure benefits and outputs are fully realized at the end of the training, (viii) incorporate disaster risk reduction and climate change resilient measures into project designs, and (ix) include strong

² Thilafushi Island is an artificially reclaimed island created in the early 1990s from a combination of garbage and sand. It is zoned for industrial use.

³ To be financed under Phase 2.

⁴ The disaster risk classification for the country is moderate. UNDP. 2005. *Developing a Disaster Risk Profile for Maldives*. Volumes 1 and 2. Male, Maldives.

⁵ UNEP. 2005. *Indian Ocean Earthquake-Tsunami of 26 December 2004: UNDAC Rapid Environmental Assessment Republic of Maldives*. Switzerland.



community consultation and training including in O&M targeting the poor and women to promote SWM projects sustainability.

12. Phase 1 will support 3 outputs: (a) waste collection, transfer, and disposal systems improved and made climate and disaster resilient; (ii) community-based outer island waste management systems targeting poor and women enhanced; (iii) institutional capacity and public awareness in sustainable waste management strengthened.
13. More specifically output (i) and (ii) will support:
 - a. A major transfer station in Malé of approximately 0.5 ha, which will include:⁶ (i) five tipping/transfer bays inclusive of ramp; (ii) vehicles and equipment maintenance workshop; (iii) garage for various equipment; (iv) recyclables and hazardous waste collection center; (v) weighbridge; (vi) landing and harbor areas for transfer vessels; (vii) 6 story admin building; and (viii) park deck for vehicles. The transfer site will accommodate mobile equipment and vehicles necessary for waste collection and transfer such as wheel loaders, hook lift trucks, tipping trucks, container handling equipment, and the corresponding part of the collection fleet.
 - b. A waste transfer site in Villimalé.
 - c. A fleet of various collection vehicles, ranging from 4, 5, to 16 m³ refuse collection vehicles (RCVs); tipping trucks and ships; hook lift trucks; and trikes.
 - d. Approximately, 30,000 bins and containers compatible with collection and transfer fleet and transfer vessels.
 - e. Subject to the final design, approximately, 3 waste transfer vessels –250/300 tons, 120 tons and 60 tons payload which can accommodate both the infrastructural requirements of islands/resorts and the final regional waste treatment facility (RWMF) on the island of Thilafushi.
 - f. Outer island waste management centers (IWMCs) for outer islands equipped with storage for recyclables, baling and glass crushing devices, composting areas, collection vehicles, bins and walls.
 - g. Harbor reception area of approximately 1 ha (partially concrete) and accommodating a guard house, a small administration building, a weighbridge, and two to three berths to unload transfer vessels or to load vessels for shipping recycled bottom ash and C&D waste.
 - h. A C&D waste processing plant, built on a concrete platform, consisting of crusher, screens, magnets and conveying equipment etc.
 - i. Improve waste management logistics at Thilafushi site.
 - j. Several material handlers to manage incoming waste in Thilafushi- heavy duty bulldozer, wheel loaders, excavators with grapple, fork lifts etc.
 - k. Basic firefighting equipment – water pumps, fire hoses, PSE.
 - l. Design of transfer station at Hulhumalé to be supported and implemented under Phase II. Conduct a siting exercise. This transfer site will encompass a scope similar to the transfer site in Malé. The dimension of the site is subject to the siting study.
14. An indicative procurement plan for Phase 1 works, plants and goods is shown in Table 1. This plan includes also the responsibility matrix with respect to the assignment of the Project Management Design and Construction Supervision (PMDSC).

⁶ An admin building will be designed and constructed separately at the same site (to be confirmed). If not done separately, there is potential the admin building will be designed and constructed under the design-build civil works package (see no. 2 in Table 1).



Table 1 - Indicative Procurement Plan and Responsibility Matrix: Phase 1

General Description	Est Value (\$ Million)	Bidding		Type of Contract	Bidding Docs by	Detailed Design	Tasks of PMDCS Besides PM
		Method	Procedure				
Civil Works							
1. Harbor rehabilitation, waste processing, administration building, and civil works (platform) for C&D plant, recycling yard, and ELV dismantling workshop.	5.0	ICB	1S2E	Itemised/ BOQ	Other Client's consultants	Other Client's consultants	Construction supervision
2. Two transfer stations in Malé and Villimalé including 6 story admin Male)	8.4	ICB	1S2E	Design, build	Other Client's consultants	DB Contractor	Supervise Detailed Design + Construction and ensure coordination with admin building works at same site, + design of TS in Hulhumalé.
3. ELV dismantling workshop (includes equipment)	0.5	ICB	1S2E	Design, supply installation	PMDSC	Contractor	Supervise Detailed Design + Construction
4. C&D waste processing plant (includes equipment) (SBD Plant-Design, build and install)	2.0	ICB	1S2E	Design, supply installation	Other Client's consultants	Contractor	Supervise Detailed Design + Construction
5. Outer Island waste management centers (up to 32) (2 lots)	2.6	NCB	1S2E	Itemised/B OQ	PMDSC	PMDCS	Construction supervision
Goods							
6. Dumpsite equipment for immediate management measures on Thilafushi Island Multiple lots (5) Lot 1: Industrial and mobile waste shredder Lot 2: Industrial and mobile rotating sieving machine Lot 3: Bulldozer	2.9	ICB	1S2E	Specified supply	Other Client's consultants	Supplier	Reviewing of Delivery, commissioning, spare parts



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Lot 4: Excavators, wheel loader and waste handler Lot 5: Arm roll trucks, tank truck, containers													
7. Collection and transport equipment (trucks, bins, containers) Lot 1: Containers and bins Lot 2: RCVs (5 m ³ multi car, 16 m ³) Lot 3: Hook lift trucks and skip loaders, trucks with crane Lot 4: Tipping trucks (small for outer islands)	5.8	ICB	1S2E	Q3/20 19	Specified supply	PMDSC (incl. fine-tuning of collection system)	Supplier	Delivery, spare parts. This package to be based on final collection and transport system finalized by PMDSC and agreed with client and endorsed by WAMCO.					
8. Outer island transfer vessels	2.4	ICB	1S2E	Q3/20 19	Specified supply	PMDSC (incl. the requirements of resorts and islands)	Supplier	Delivery, spare parts					
9. Transfer station equipment and recycling equipment (vehicles, containers, cranes, roll packers, conveyors) Lot 1: Mobile crane/reach stacker (Male) Lot 2: Mobile conveyor (Thilafushi) Lot 3: Roll packers Lot 4: Wheel loaders Lot 5: Fork lift Lot 6: Arm roll /tipping trucks, containers Lot 7: Street sweepers Lot 8: Workshop equipment	3.8	ICB	1S2E	Q3/20 19	Specified supply	Other Client's consultants	PMDSC	Delivery, commissioning					
10. Outer island waste management centers equipment (2 lots)	1.8	ICB	1S2E	Q1/20 20	Specified supply	PMDSC	Supplier	Delivery and installation					

1S2E = one stage two envelopes; BOQ = bill of quantity; C&D = construction & demolition; DB = design and build; ELV = end of life vehicles; ICB = international competitive bidding; NCB = national competitive bidding; PMDSC = project management, design and supervision consultant

i) *designed under Phase 1 and implemented under Phase 2, final scope and costs are pending



B. Objectives of the Assignment

The consultant will assist the PMU in project management, capacity building, monitoring, technical designs and supervision support to ensure project outputs are achieved.

C. Scope of Services, Tasks (Components) and Expected Deliverables

15. **Scope of Services:** The consultant will be an engineering and management consulting firm which will provide design, management and construction supervision services, including (but not limited to): (i) surveys, studies and investigations; (ii) concept design and detailed engineering and design; (iii) bidding process support; (iv) procurement and contract award; (v) construction supervision; (vi) contract administration; (vii) project management and monitoring; and (vi) ensure compliance with social, environmental, and, occupational health and safety aspects for the scope of equipment as mentioned in table 1. The consultant will work under the guidance of the PMU established under the project, and in close collaboration with public awareness and community capacity building consultants (PACCB)⁷ and other consultants supporting the project.

16. The overall responsibility to deliver the outputs will rest with the consulting firm through the team leader. The consultant will ensure timely delivery of the documents, establish coordination among all stakeholders and team members, schedule mobilization/demobilization of team members and to interact with the client on regular basis.

17. The scope of services under this Terms of Reference (TOR) will include (but not limited to):

a) Project Management

- i) Provide project management support and capacity building for the PMU in planning and managing the project cycle (design, procurement, construction, commissioning stages, and post-defect liability period);
- ii) Prepare a realistic project schedule (design, approval, tendering, construction, commissioning, handover) and corresponding projected cash flow in conjunction with the Client;
- iii) Establish and help PMU maintain an effective management system in accordance with the design and monitoring framework to monitor progress and project performance against key targets and indicators, including project performance management system (PPMS) to ensure timely, and high-quality implementation and completion;
- iv) Integrate indicators related Gender action plan in the PPMS;
- v) Develop uniform working procedures, quality assurance and control system for the smooth implementation of all contracts; and
- vi) Support to ensure compliance with all reporting requirements of the Project.

b) Geotechnical surveys and investigations, general data collection

- i) Conceptualize, specify and prepare bidding documents for geotechnical survey and site investigations;
- ii) Carry out boreholes or other measurements to identify and confirm water table depth and groundwater quality (for benchmarking);

⁷ PACCB will provide most support in delivering project output 3, and in community consultations for output 1 and 2.



- iii) Supervise and control site investigation and instruct contractors to abide to specified requirements;
 - iv) Collect information on the facilities available on islands and resorts to streamline/ensure seamless waste collection and transfer; and
 - v) Assist the Client as far as required and needed in the siting of the Hulhumalé transfer site and sustained operation of the system.
- c) **Concept design and detailed engineering and design, bidding process management, procurement and contract award**
- i) In line with the national regulatory framework and waste management strategy, following international best practices, and in close consultation with the client, WAMCO and other relevant stakeholders, provide concept design for waste collection system in Malé and Hulhumalé (building from previous concept designs) and seamless waste transfer system for Zone 3 including vehicle routing from outer islands and resorts to regional waste facility in Thilafushi;
 - ii) Prepare in close collaboration with the Client the concept and detail design for the outer island waste management centers (IWMC) based on a demand analysis, the seamless waste collection and transfer system design from island to the regional facility in Thilafushi subject to the relevant findings for each location,
 - iii) Prepare in close collaboration with the Client the concept design for the transfer station in Hulhumalé in line with the procurement schedule;
 - iv) Screen eligibility (following criteria defined in the project administration manual), prepare Appraisal Reports for each outer island and submit to PMU for review as basis for the Island Council to receive support for IWMCs component (Output 2 of project). The Appraisal Reports will review and confirm compliance with the eligibility and selection criteria (in the project administration manual), and criteria outlined in the safeguard frameworks, including confirming suitable land available and capacity for implementing IWMCs. The Appraisal Reports will be prepared in consultation with Island Councils and in coordination with the PACCB Consultants;
 - v) Prepare detailed engineering designs, drawings, technical specifications and costs and quantity estimation as required (see indicative responsibility matrix in Table 1);
 - vi) Ensure findings from community consultations including women conducted by the PACCB consultants are incorporated into the IWMC design;
 - vii) Prepare bidding documents including technical specifications, assist MOE in evaluation and report writing as required (see indicative responsibility matrix in Table 1);
 - viii) Review detailed design as prepared and submitted by the contractor as per indicative responsibility matrix in Table 1).
 - ix) Assist in obtaining ADB's no-objection at various stages of procurement and construction activities; and
 - x) Prepare the necessary documentation assessing the justification of the works.



- d) **Construction supervision and contract administration, project management and monitoring**
- i) Maintain sufficient site-based staff, with clear allocation of duties, to supervise day-to-day construction activities;
 - ii) Support and assist the Client in implementing its duties as Engineer/Engineer's Representative within the context of provisions of work and supply contracts;
 - iii) Co-ordinate with the stakeholders to achieve timely completion of contractual obligations on the part of contractor and the Client;
 - iv) Support and assist the Client in contract administration and compliance with contractual conditions;
 - v) Proof checking of detailed designs and, depending on the type of contract, also carry out or suggest design modifications as necessary (see responsibility matrix in Table 1);
 - vi) Ensure that the works/contractual deliverables comply with the approved engineering designs and technical specifications mentioned in the Contract, agreed schedule of payment and timelines, terms of conditions of the Contract;
 - vii) Ensure compliance with standard engineering practice by the contractors;
 - viii) Ensure supply of goods complies with required technical specification (see responsibility matrix in Table 1);
 - ix) Support and assist the Client in taking engineering decisions;
 - x) Develop quality assurance and quality enhancement system, quality control plan, prepare quality compliance reports and progress reports; and
 - xi) Assist the Client in forecasting the progress of works and finalization of periodic targets for the expenditure and disbursement.
- e) **Social, environmental, occupational health and safety aspects.**
- i) Ensure compliance with ADB safeguard requirement and project safeguard frameworks (Environmental Assessment Review Framework and Resettlement Framework).⁸ Provide guidance on safeguards and issue instructions to the contractors and monitor compliance;
 - ii) Assist in obtaining all necessary permissions and complying with statutory requirements;
 - iii) Update the Environmental Management Plan (EMP) as necessary to reflect detailed design;
 - iv) Prepare an initial environmental examination (IEE) including EMP for the proposed (i) Hulhumalé transfer station, and (ii) outer island projects - IWMCs (one IEE for all islands). Ensure EMP is included in the bidding documents. Ensure that assessment and provision for mitigation of risks associated with birds attracted to the transfer station on air traffic at the nearby Velana International Airport are included;
 - v) Ensure that relevant bidding documents and contract documents contain the EMP and such items are included in bill of quantities (BOQ);
 - vi) Review the contractor's Environmental Management Plan (CEMP) for adequacy in terms of compliance with the requirements of the EMP and instruct amendments and additions as necessary;
 - vii) Confirm the involuntary resettlement / indigenous peoples impacts based on detailed design and prepare or update social safeguards reports as required. Monitor and ensure compliance with the agreed resettlement framework;

⁸ Asian Development Bank Safeguards Policy Statement (2009).



- viii) Prepare or update the environmental monitoring plan and report format to reflect detailed design and the CEMP. Monitor and ensure compliance with implementation of the EMP during the construction phase;
- ix) As part of the EMP, prepare a project focused Occupational Health and Safety Plan (OHS) to be adopted by the Client and the contractor; and
- x) Ensure that relevant provisions in contracts on OHS are abided by the contractors during the construction works.

18. **Tasks (Components) and Expected Deliverables.** The consultant will carry out the following tasks (but not limited to):

a) Project orientation and planning

- i) Advise and support the PMU with overall strategic direction, planning, implementation, management, risk management, cost control, and scheduling;
- ii) In consultation with MOE/PMU, prepare detailed annual work plans with progress milestones covering the entire project period, staffing schedules and equipment budgets, and ensuring gender and inclusion issues integrated as a result of PACCB consultant work; and
- iii) Create a project website to disclose key project-related information, including costs, safeguards, procurement such as the list of participating bidders, name of the winning bidder, basic details on bidding procedures adopted, amount of contract awarded, and the list of goods/services procured.

b) Concept design and detailed engineering and design

- i) Prepare concepts, lay-out and specifications in line with the regulatory requirements for a **seamless (compatible from end-to-end) waste collection and transfer system** in Malé and Hulhumalé including suitable refuse compactors of different sizes, hook lift trucks, skip loaders, satellite collection vehicles etc.; Identify suitable containers size and positions to decouple the primary waste collection from the secondary collection and define the appropriate number of containers to be used for the future collection system;
- ii) Liaise with all relevant stakeholders to reconcile the waste collection concept (making it seamless) prior to specify the equipment;
- iii) Conceptualize the waste transfer from Hulhumalé and incorporate the waste forecast into the concept of the transfer station;
- iv) Consult with the Client on the siting of the transfer station in Hulhumalé and prepare the concept design in close collaboration with the Client and other stakeholders to avoid reiterative planning;
- v) Prepare the bidding documents (following ADB's policies, guidelines and standard bidding documents) for Hulhumalé transfer station and support advanced procurement in consultation with PMU;
- vi) Prepare concepts, lay-out and specifications for a **seamless (compatible from end-to-end) waste transfer system** from outer islands and resorts to the regional facility in Thilafushi including, but not limited to, vessel equipped with cranes, mobile compaction units and suitable containers to allow a seamless transfer of waste;
- vii) Screen eligibility (following criteria defined in the project administration manual) for the Island Council to receive support for IWMCs component (Output 2 of project)

- viii) Prepare Appraisal Reports for each outer island and submit to PMU for review as basis. The Appraisal Reports will review and confirm compliance with the eligibility and selection criteria (in the project administration manual), and criteria outlined in the safeguard frameworks, including confirming suitable land available and capacity for implementing IWMCs. The Appraisal Reports will be prepared in consultation with Island Councils and in coordination with the PACCB Consultants;
- ix) Prepare detailed engineering designs for IWMCs including drawings, technical specifications and costs (for work and equipment) and quantity estimation as required (see indicative responsibility matrix in Table 1);
- x) Ensure findings from community consultations including women conducted by the PACCB consultants are incorporated into the IWMC design
- xi) Review designs, drawings and other documents available with Client and update them as required;
- xii) Check the detailed designs of the planned infrastructure against natural hazard risks and climate change;
- xiii) Prepare detailed designs including construction drawings in accordance with sound and established engineering practices as listed in the responsibility matrix; prepare tender drawings and cost estimates etc. The design will be sufficiently detailed to ensure clarity and understanding by all stakeholders and to permit the contractor to effectively carry out work;
- xiv) Ensure seamless design and coordination between civil contractors engaged in different components of the Malé transfer station and other sites, and coordinate the interfaces, such as but not limited, to: extension of foundation, base floor area, MEP and ICT for building services, routing of supply mains, façade design etc.;
- xv) Prepare concept designs including preliminary construction drawings in accordance with sound and established engineering practices for a waste transfer station in Hulhumalé to be supported and constructed in Phase 2; prepare tender drawings and cost estimates etc. The design will be sufficiently detailed to ensure clarity and understanding by all stakeholders and to permit the contractor to effectively carry out works. The transfer station design will be compatible with the collection and transfer system [see points (i), (ii) and (iii)] to ensure seamless waste management operations;
- xvi) Review (reiteratively, as the case may be) detailed design including drawings, bill of quantity and specification of equipment provided by contractors/suppliers as required per responsibility matrix and clarify compliance with appropriate standards, make alternative suggestions if required and sign off the design upon consultation with Clients;
- xvii) Compile bill of quantity and specify equipment as per responsibility matrix (Table 1);
- xviii) Prepare documents required for statutory and other clearances;
- xix) Assess land requirement, preparation of land acquisition documents if required as consequence of detailed design; and
- xx) Assess environmental aspects for detailed designs.

c) Bidding process management, procurement and contract award

- i) Assist the Client in bidding process management and all procurement activities in accordance with agreed procurement plan;
- ii) Assist the Client in issuing invitation for bids, addendum/corrigendum, and clarifications to bidders' queries;

- iii) Assist in bid evaluation and preparation of Bid Evaluation Reports and obtain ADB's no-objection, award of contract and signing of contract;
 - iv) Prepare contract documentation to include Letter of invitation, conditions of contract, specifications, design parameters; bills of quantities, etc. in close coordination with the Client; and
 - v) Prepare a detailed implementation schedule and management plan covering all stages of the procurement and implementation process right from field survey and investigations to acceptance of finished work.
- d) **Construction supervision and contract management:** The consultant will support the client in and be responsible to carry out the following tasks, which are neither limited nor conclusive:
- i) Review construction contracts/documents and conduct site visit of all ongoing contracts and identify i) potential initial activities to which the construction contractors must comply, and ii) the obligations of the Client, if any. Bring to the attention of the Client any potential contractual issue and construction problem that warrants their early attention;
 - ii) Maintain sufficient site-based staff, with clear allocation of duties, to supervise day-to-day construction activities;
 - iii) Check supplies of equipment for compliance with Client's requirement and specification as set forth in the supply contract;
 - iv) Supervise the assembly of equipment to facilities and monitor assembly progress towards expected milestones;
 - v) Supervise the commissioning and the final acceptance of the facilities based on a final acceptance test as required;
 - vi) Review the detailed design, construction and working drawings for their correctness and adequacy prior to start of works, report of findings and propose/recommend for modifications or corrections to any defect or omission; monitor impact and report on physical progress of the works and financial disbursements;
 - vii) Review the contractor's construction methodology including CEMP (particularly for the Malé transfer site and align with concurrent daily transfer operations) and work proposal to the extent required by respective contract. Submit comments on required modifications, if any, and recommend for approval as appropriate; monitor impact and report on physical progress of the works and financial disbursements;
 - viii) Coordinate construction activities of different civil contractors based on seamless design and work out a construction program and sequencing jointly with the contractors to avoid any interference with the ongoing waste transfer;
 - ix) Ensure required instructions received by the contractor/supplier and complied with the requirements of the contract;
 - x) Be responsible for management and supervision of construction contracts as per the contract document;
 - xi) Check the adequacy and quality of contractor's input in terms of material, equipment and machinery, workers and safety requirement prior to commencement of the works and time-to-time during construction activity;
 - xii) Check the line level, layout of the construction to ensure conformity with the contract, proposed and present, for approval, any changes in the plans that may be deemed necessary indicating effect due to the change on contract and preparation of variation orders accordingly;
 - xiii) Inspect and supervise the day-to-day operations and activities of the



- contractor to ensure that the completed works follow the approved drawings and specifications of relevant construction contracts;
- xiv) Monitor the contractor's compliance with safety requirements during and prior to the commencement of construction activities. Assist in preparation of accident report in the event of unfortunate occurrence of any accident on the site(s);
 - xv) Monitor and report the engagement of child labor by the contractor, if any. Ensure the compliance by the contractor of the labor protection clause in the contract or required by the regulatory authority;
 - xvi) Ensure contractor's compliance with ADB's safeguard policy and the requirements and in accordance with social, environmental occupational health and safety aspects as defined above;
 - xvii) Maintain at site or at project office all duplicates of the contracts, technical drawings, catalogues and drawings, specifications, survey notes, quality control documents and any other documents, as necessary;
 - xviii) Assist the Client and the contractor to develop alternative methods to overcome unexpected obstacles which may affect the execution of the works;
 - xix) Assist the Client in identifying and documenting of underground utilities and removal designs, as required;
 - xx) Co-operate, facilitate and report on all removal/relocation of on-site activities pertaining to ground or underground utilities;
 - xxi) Examine and ensure the completion drawings/as built drawings prepared and submitted by the contractor, submit recommendations in the event of change or correction is required therein prior to acceptance by the Client;
 - xxii) Ensure maintenance of documentations on the quality control and quality assurance, test reports, log books etc. by the contractor in an acceptable manner;
 - xxiii) Check internal quality management system of the contractor's documentation, quality management method, quality control reporting, quality control staffing. Submit its recommendation on any change if warranted/deemed necessary. Periodically audit contractor's compliance with quality control/quality assurance requirements and submit report to the Client;
 - xxiv) Check to ensure that type and frequency of test requirements for material on site and in laboratory comply with technical specifications as required in the contract. Test equipment to be used or installed prior to its incorporation in the works;
 - xxv) Conduct, witness and supervise testing of materials and equipment to be incorporated in the works at site, laboratory, at source of materials and equipment or any other location. Check testing results to ensure compliance with the provisions of the contract;
 - xxvi) Store all records and documents related to quality assurance/ quality control at safe custody and make available when required;
 - xxvii) Maintain daily (for works package 1, 2 and 3 based on Table 1) or sufficient (subject to the volume of construction works) notes/diary of execution progress for the construction activities on site as well as notes of arising potential problem on site that may affect the execution progress or require change or variation;
 - xxviii) Attend periodic meetings with the Client and the contractors to discuss, approve the execution progress, remaining progress, difficulties, and any potential problem anticipated that may affect execution, progress, propose constructive solutions/ remedies to overcome problem and difficulties for

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- smooth operations of execution progress;
- xxix) Attend, facilitate constructively and report all feedback/complaints of community related to execution of works;
- xxx) Record measurements of works executed at site from beginning to completion of project; subject experts will ensure that works are carried out as per the approved design/drawings & specification and supervise pre-construction, construction activities and commissioning tests at works;
- xxxi) Certify that quality of both works and goods is conformant with design specifications and drawings;
- xxxii) Upon appropriate follow up and certification of the works completed, review the bill of quantities prepared; and
- xxxiii) Carry out their assignment according to the schedule of the contractor, including late working hours, weekends and holidays, overtime etc., when approved by the Client.



e) Project Management and Monitoring

- i) Prepare and submit detailed work program, including all pertinent activities and critical paths, responsibility and function of each team member, co-ordination mechanism and procedures between the consultant, contractor and the Client; reporting system and the procedure etc. to ensure orderly and uninterrupted progress of the works. The mechanism and procedures set by the consultant shall be subject to the approval by the Client;
- ii) Develop program management and tracking system, using commonly available computer software to schedule and monitor all aspects of construction activities;
- iii) Support to implement mitigation measures to minimize risk elaborated in risk management plan for the project;
- iv) Identify all necessary approvals and permissions etc. required during the implementation of the Contracts in accordance with the Government regulations and provisions of the Contracts;
- v) Plan and assist the Client in obtaining, in a timely manner, the required clearances, permits, approvals, sanctions or any other information from relevant competent authorities so that the project activities are not unduly delayed;
- vi) Establish document control and proper filing system for project offices, including official correspondence, drawings, site instructions, variation orders and site records. Establish channel and mode of communications;
- vii) Review, comment, and recommend, for Client's approval, the contractor's proposed implementation schedule and programs, including time over-run aspect and cost over-run, if any. Monitor the schedule and proactively instruct the contractors to take corrective action to complete the works in time;
- viii) Review and recommend on the contractor's claim for progress payments;
- ix) Assist in resolution of contractual issues including review, evaluation and confirmation of contract variation orders;
- x) Review and examine the contractor's request for variation orders such as extra items, new rates, claims for time extension and extra payment, filed by the contractor etc. and submit recommendations for approval, if appropriate;
- xi) Assist constructively and submit recommendations in resolving any potential difficulty or dispute that may arise between the contractors and the Client.
- xii) Assist the Client in certification of partial, substantial and completion of the works in accordance with the provisions of the Contracts, including stage certification and final acceptance test;
- xiii) Assist on liaison with local authorities, government agencies and ADB. Assist the Client in reporting to these agencies;
- xiv) Assist the Client in meeting its obligations under the Grant/Project Agreement and assist in reporting;
- xv) Prepare essential documents including quick report on progress, quality, disbursement or any other relevant matter as may be required by the Client or ADB;
- xvi) Assist the Client in conducting regular meetings with all stakeholders, municipalities, contractors, and other government entities, etc., to discuss progress and issues related to implementation, and prepare minutes for recording and circulation;
- xvii) Establish all necessary records and the procedures of maintaining/updating such records for each package and for the entire project;
- xviii) Develop and implement procedure for timely payments to the contractors and monitor for compliance;
- xix) Assist the Client in ensuring compliance with all loan covenants during project implementation.

f) Social, environmental, occupational health and safety aspects:

- i) Prepare stakeholder consultation strategy and plan for creating positive ownership on project activities and outputs;
- ii) Prepare, review and update the Initial Environmental Examination (IEE) prepared for the project; review the prepared Environmental and Resettlement Framework EARF based on newly identified packages and prepare/update IEE accordingly: carry out disclosure as necessary during and after detailed designs;
- iii) Support in establishing grievance redress mechanism acceptable to ADB under the project through following activities; (a) prepare a project specific guideline on complaint handling and conflict resolution; (b) maintain and regularly update a complaint/resolution data base; and (c) monitor complaint, handling, to ensure follow up resolution efforts at levels.
- iv) Obtain all necessary permissions and complying with statutory requirements as required prior to construction,
- v) Prepare a semiannual and annual safeguard monitoring report for MOE to submit ADB;
- vi) Ensure that all bidding documents and contract documents contain the EMP and such items are included in BOQ; also monitor the implementation of the EMP during construction and pre/post construction phases;
- vii) Ensure and control the compliance by the contractor to the Environmental Monitoring/EMP, the relevant OHS regulations as stipulated in the contract or required by the Client's country law or by the Client's authority and submit regular monitoring reports on the format and to the frequency set out in the EMP;
- viii) In compliance with the EMP, develop a strategy to overcome potentially arising difficulties of construction/traffic management in narrow streets and also prepare, in due consultation with the contractor, detailed plans for detour of traffic during works Propose and implement mechanism for coordination among all stakeholders such as traffic police, roads department, user committees, etc., for smooth construction execution;
- ix) Prepare Health and Safety Plan (OHS) to be adopted by the Client and the contractor;
- x) Ensure fair working condition to workers through implementing following activities:
 - a. provide awareness raising programs for workers at construction sites informing them about their opportunities, rights and duties;
 - b. ensure that workers are fully aware of the insurance facilities provided under the contract and facilitate claims arising out of injuries, disabilities and death;
 - c. enforce strictly the provisions of use of labor cards;
 - d. provision of equal pay for both the men and women for equal volume of works performed,
 - e. provide training on OHS, environmental impacts and mitigation measures to the contractors including contractors' workers.



- xi) Provide technical inputs to PACCB consultant for ensuring gender equality and social inclusion (GESI) targets and approaches in stakeholder participation and consultation.

D. Team Composition & Qualification Requirements for the Key Experts (and any other requirements which will be used for evaluating the Key Experts)

19. **Team Composition with estimated input:** The consultants' team will include 6 International Key Experts (21 person-months), 8 National Key Experts (69 person-months) and 3 National non-Key Experts (12 person-months excluding those required for consultant's administrative, clerical and support staff). The consulting firm will be engaged for three years. The expert's positions with their estimated inputs are provided in Table 2. Any other staff to fulfill the services will be provided by the consultant.

Table 2: Team Composition

		Total Person Months
I	International Key Expert	
1	Solid Waste Management Expert (Team Leader)	8
2	Contract Management Expert	2
3	Procurement Expert	1
4	Civil Engineering Expert	2
5	Mechanical Engineering Expert	2
6	Waste Collection Expert	6
	International Key Experts Sub-Total	21
II	National Key Expert	
1	Project Management Expert (Deputy Team Leader)	30
2	Procurement Expert	3
3	Civil/Structural Engineering Expert	6
4	Mechanical Engineering Expert	6
5	Naval Engineering Expert	6
6	Electrical Engineering Expert	6
7	Environmental Safeguard Expert	12
	National Key Experts Sub-Total	69
III	National Non-Key Expert	
	Field Engineer (3 x 4 months each)	12

20. **Expected Qualification Requirements and Tasks assigned to the Key and non-Key Experts:** The Consultant is expected to propose adequately qualified and experienced experts to undertake efficiently the assigned tasks and responsibilities assigned. The tasks and responsibilities assigned and detailed educational qualification and experience requirement for the respective expert are reported below.

21. **Solid Waste Management Expert – Team Leader (International).** Solid Waste Management Expert will be responsible for overall project management and administration,



advice on feasibility, procurement and bid process management, design, construction supervision, quality control and monitoring, contract management, establishment of construction management and project performance monitoring of various contractors, assist in resolving contractual issue, preparation of progress and other reports as required. He/she will have: (i) a civil/environmental engineering degree or related fields and post graduate in solid waste management or related fields; and ii) 15 years of working experience in solid waste management projects design, construction and supervision. Experience and sound knowledge of FIDIC contract conditions, ADB procedures/policies, contract management will be an advantage.

22. **Contract Management Expert (International).** Contract Management Expert will be responsible for support in management and administration of the project, assist in establishment of construction management and reporting system; adequate documentation on contract administration and progress, time & cost control, variations and change orders, billing & payments to the contractors, control the project and minimize the cost over-run and time over-run, timely review and settlement of contractor's claims. Shall assist in resolving contractual issue and dispute resolutions during implementation. He/she will have: (i) A Degree in Civil/ Environmental Engineering or related fields and a Masters in Civil Engineering, law or related fields; and ii) 15 years of Experience in contract administration related to Procurement of Works and Goods for infrastructure projects. Sound knowledge of FIDIC contract conditions, ADB procedures/policies, and construction supervision of urban infrastructure projects will be an advantage.

23. **Procurement Expert (International).** Procurement Expert will be responsible for overall Bid process management, procurement of works and goods. Preparation of bidding document, assist in obtaining ADB's no-objection, finalization of bid evaluation report and assist in contract award. He/she will have: i) A Masters in Civil Engineering or related engineering degree, finance or law , ii) 10 years of experience in procurement of Works and Goods for urban infrastructure projects, and iii) sound knowledge of FIDIC contract conditions, ADB standard bidding documents, procedures/policies.

24. **Civil Engineering Expert (International).** Civil Engineering Expert will be responsible for design of all civil engineering elements as required, review and approval of civil engineering designs/drawings/details submitted by various contractors. Assist in appraisal and preparation of designs and drawings and procurement in activities for subsequent procurement. Assist in monitoring and ensure quality assurance and control. He/she will have: a) Degree in Civil engineering with masters in structural engineering, ii) 10 years of experience in structural Engineering Design, and Construction Supervision. Sound knowledge of ADB procedures/policies, construction supervision, design and implementation related to similar works will be an advantage.

25. **Mechanical Engineering Expert (International):** Mechanical Engineering Expert will be responsible for reviewing design, drawings and data, technical specifications, ensure quality assurance and quality control. Assist in resolving technical and contractual issues. Assist in appraisal and preparation of designs and drawings and Procurement activities for subsequent procurement. He/she will have a :i) Master's degree in Mechanical Engineering, ii) 10 years of experience in mechanical engineering positions dealing with waste processing equipment such as, shredders, wood chippers, balers, CDW processing facilities, ELV dismantling and iii) sound knowledge of ADB procedures/policies, construction and installation supervision, design and implementation of works related to solid waste management transfer stations, C&D waste processing, recycling, end of live vehicle dismantling will be an advantage.

26. **Waste Collection Expert (International):** Waste Collection Expert will be responsible for the final design of a seamless waste collection and transfer system for all solid waste types generated in Malé and Hulhumalé based on the conceptual design input provided by MOE.

He/she will specify the required equipment such as, but not limited to, refuse compaction vehicles, skip loaders, hook lift trucks and containers, and will identify suitable collection points/containers location jointly with WAMCO and other stakeholders. He/she will assist the National Naval Engineering Expert during the conceptualization of the containerized waste transfer system from the islands. Furthermore, he/she will inspect the delivery of the vehicles and the scope of spare parts. He/she will have a: i) Master's Degree in Mechanical Engineering or equivalent; and ii) 10 years of experience in designing waste collection systems in similar environments (congested cities and/or island states). Sound knowledge of ADB procedures/policies would be regarded as advantage.

27. **Project Management Expert (National) – Deputy Team Leader:** Deputy Team leader cum Project Management Expert will assist the international team lead in overall project planning, management and administration of the project, appraisal of subproject as required, time and cost control, advice on procurement including bid process, construction supervision, quality control and monitoring, contract management, establishment of construction management and project performance monitoring and reporting system; assist in resolving contractual issue, preparation of progress, completion and other reports as required. He/she will have i) civil engineer/urban planning degree with project management professional certification or similar, ii) 10 years of working experience in similar works and 5 years of experience in project management. Sound knowledge of FIDIC contract, ADB standard bidding documents, procedures/policies, project management and preparation of projects will be an advantage.

28. **Procurement Expert (National):** Procurement Expert will be responsible for overall bid process management, procurement of works and goods for Phase 1, including preparation of bidding document, assist in obtaining ADB's no-objection, finalization of bid evaluation report and assist in contract award. He/she will have i) A Civil engineering or relevant engineering degree. Post graduate in Civil/ Environmental Engineering/Finance/Law will be an advantage, ii) 5 years of experience in procurement of works and goods for urban infrastructure projects or similar, and iii) sound knowledge of FIDIC contract and ADB standard bidding documents, procedures/policies.

29. **Civil/Structural Engineering Expert (National):** Civil/Structural Engineering Expert will support design of all civil/structural engineering elements as required, review and approval of structural designs/drawings/details submitted by various contractors. Assist in monitoring and ensure quality assurance and control. He/she will have i) A Civil Engineering Degree –Masters in structural engineering is preferred, ii) have 7 years of Experience in Civil/Structural Engineering Designs, and iii) sound knowledge of ADB procedures/ policies, related to similar works. Experience in construction supervision will be an advantage.

30. **Mechanical Engineering Expert (National):** Mechanical engineering Expert will assist in preparation and finalization of engineering design, drawings and data, technical specifications, review and approval of designs/drawings/details, ensure quality assurance and quality control. Assist in resolving technical and contractual issues. He/she will have i) Degree in Mechanical Engineering, Masters in Mechanical Engineering with post graduate in plant design preferred, ii) 7 years of experience in mechanical design of plants, conveying or crushing/shredding components, and iii) sound knowledge of ADB procedures/policies. Experiences in construction/assembly supervision and implementation of similar works/plants will be preferred.

31. **Naval Engineering Expert (National):** Naval Engineering Expert will be responsible for the specification of customized vessels for the transfer of waste and of the specification of a standardized and containerized transfer system of the waste generated on the islands and the resorts based on the concept provided by the Client's feasibility study consultant. He/she will prepare the conceptual drawings, review design specifications and drawings of suppliers. He/she



will have i) Degree in Naval Engineering/Architecture, Masters in mechanical engineering with post graduate in naval engineering or a masters in naval engineering preferred, or similar ii) 7 years of experience in the design of customized vessels (incl. cranes) for cargo or container transport, iii) knowledge of containerized waste transport would be regarded as advantage.

32. **Electrical Engineering Expert (National):** Electrical Engineering Expert will be responsible for review and preparation and finalization of engineering design, drawings and data, technical specifications, review and approval of designs drawings/details, ensure quality assurance and quality control. Assist in resolving technical and contractual issues. He/she will have i) masters in electrical engineering- post graduate in electrical installation will be preferred, ii) 10 years of experience in design of electrical supply and distribution system of plants and facilities, iii) sound knowledge of ADB procedures/policies, iv) construction and installation supervision of similar works.

33. **Environmental Safeguard Expert (National):** Environmental Expert will be responsible for overall management and implementation of environmental and social safeguard policies of ADB and Government of Maldives, and will support climate change and disaster risk reduction activities related to the project design. He/she will confirm no land acquisition, resettlement, or livelihood loss from the project, especially outer island component, and ensure projects are compliant with the resettlement framework, as relevant. Preparation and implementation/supervision of Environmental Safeguard Action Plan, Initial Environmental Examination Report. He/she will have; i) masters in environmental or civil engineering - post graduate in disciplines related to environmental management will be preferred, ii) 10 years of experience in carrying out EIA, IEE/ EMP for infrastructure projects, including experience of overseeing implementation of EMPs for at least two major infrastructure projects funded by international financing institutions, iii) knowledge and experience of climate change and disaster risk reduction in the Maldives, and iv) sound knowledge of ADB procedures and policies including SPS 2009.

34. **Field Engineers (Non-Key Expert):** Field Engineers will report to Deputy Team leader cum Project Management Expert and will be support during construction supervision, quality assurance/control and administration of multiple contracts, supervise the construction activity diligently during the implementation of the work, support in preparing daily notes and the reports on construction progress and completion, assist in resolving contractual issue, ensure safety at works and compliance with ADB's safeguard policies and procedure. He/she will behave i) a civil engineering degree or relevant engineering degree, ii) have 7 years of experience in construction supervision/management, quality control, contract administration of infrastructure projects of similar capacity. Experience in FIDIC contract conditions are regarded as advantage.

35. **Support Staff:** The Consultant will be required to deploy minimum following Support Staff for timely delivery of deliverables and for smooth operation of Office function. The required positions with respective qualification and experience are described in **Appendix 1**.

E. Reporting Requirements and Time Schedule for Deliverables

36. **Reporting Requirements:** During the performance of the services, the Consultant will prepare required reports for submission to the Client in electronic form and/or hard copies as per Client's instructions and in English. The report format will be consistent with the requirements of ADB and Government of Maldives and will be proposed by the Consultant in its inception report. The reporting formats will be amended from time-to-time in consultation with the Client. The consultant will submit at least the reports at periods stated in **Table 3**.



Table 3: Reporting Requirements

Reports	Number of Copies	Time Schedule
Inception Report	5	Within 30 days from the date of issuance of Notice to Proceed.
Monthly Progress Reports	5	Every month within 5 days of the commencement of next calendar month.
Quarterly Progress Reports	5	Every quarter within 10 days of commencement of next quarter.
Annual Progress Report	5	Every year within 15 days of commencement of next year. For the purpose of Annual Progress Report the year shall mean and refer either to calendar year or other suitable period as the Client may decide in consultation with the Consultant.
Draft Completion Report	5	Within 30 days of completion of Consulting Services Assignment.
Final Completion Report	5	Within 30 days of issuance of Client's comments on Draft Completion Report.
Any other reports	As required	As and when required by the Client.

37. Since the Services consist of the supervision of civil works, the following action will require prior approval by the Client:

"Taking any action under a civil works contract designating the Consultant as "Engineer", for which action, pursuant to such civil works contract, the written approval of the Client as "Client" is required."

F. Client's Input and Counterpart Personnel

38. Professional and support counterpart personnel will be assigned by the Client to the consultant's team: Client may provide the counterpart staff for supervision of works in field as available with the Client; it will be discussed and finalized during contract negotiations and agreed.

G. Inputs, project data and reports to facilitate preparation of the Proposals:

39. The consultant will have access to the following inputs, project data and reports available with Client to facilitate preparation of the proposals:

- a) Data, reports, maps etc. as available with the Client;
- b) Feasibility reports, design reports and drawings as available with the client.



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Appendix 1

Support Staff

CAD Operator (Support Staff): CAD operator will have a Diploma/ Certificate in CAD or otherwise suitably qualified with 3 years-experience in CAD.

Office Manager (Support Staff): Office Manager will be Graduate with proficiency in English and Local language both with 3 years-experience Office management.

